

The Role of Small Business in the Future U.S. Defense Industrial Base

**National Small Business Conference
San Diego, CA**

DUSD (Industrial Policy)

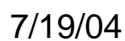


July 21, 2004



“The energy and vitality that we see in smaller niche segments in our society, in technology, tends not to deal with government because ... dealing with government is just a put-off. Who in the world wants to do it if he can avoid it? It’s burdensome. It’s ugly. It takes forever to get anything done. Delay helps the big companies, because they’ve got all the lawyers and all the lobbyists and all the people in Washington. Smaller companies don’t have the time to do all of that. That means that government tends not to have the kind of interaction with the creativity and innovation that exists in our society.”

*– Secretary of Defense Donald H. Rumsfeld
November 18, 2002*



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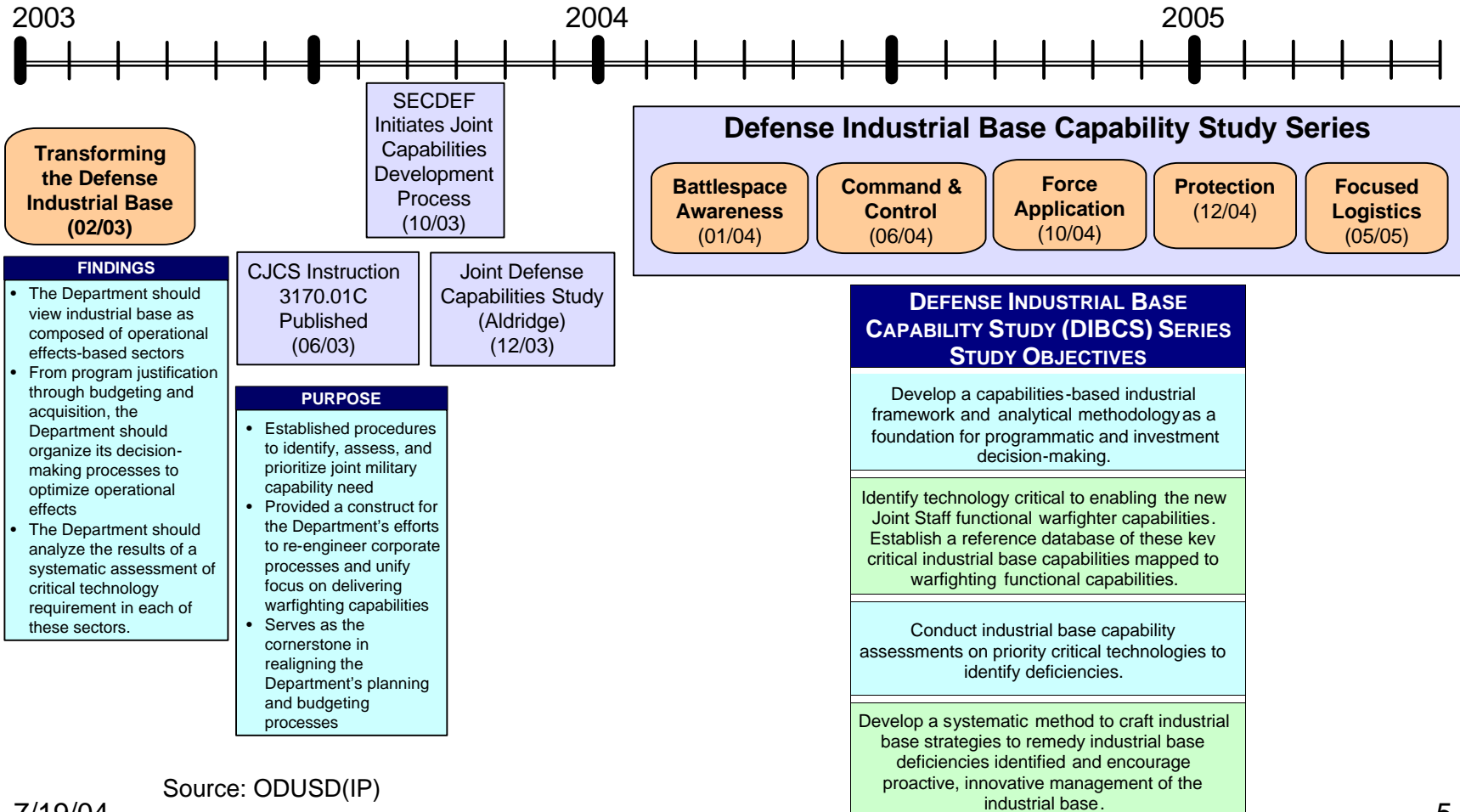


Joint Staff Functional Concepts

<p>Battlespace Awareness</p> <p>Global Hawk, MP -RTIP, NAS, Predator UAV (MQ -9), NPOESS, SBIRS -High, Cobra Judy Replacement, E -2 Advanced Hawkeye</p>	<p>Capabilities of commanders and all force elements to understand the environment in which they operate and the adversaries they face. Uses a variety of surveillance capabilities to gather information, a harmonized secure netcentric environment to manage this information, and a collection of capabilities to analyze, understand and predict.</p>
<p>Command and Control</p> <p>GBS, AEHF, FBCB2, JTRS, SMART-T, WIN -T, MCS, NESP</p>	<p>Capabilities that exercise a commander's authority and direction over forces to accomplish a mission. Involves planning, directing, coordinating, and controlling forces and operations. Provides the means for a commander to recognize what is needed and ensure that appropriate actions are taken.</p>
<p>Force Application</p> <p>AMRAAM, DDG 51, GMLRS, JDAM, JSOW, CVN 21, MM III, SSGN</p>	<p>Capabilities to engage adversaries with lethal and non-lethal methods across the entire spectrum of conflict. Includes all battlefield movement and dual-role offensive and defensive combat capabilities in land, sea, air, space, and information domains.</p>
<p>Protection</p> <p>ATIRCM/CMWS, PAC -3, Chem Demil</p>	<p>Capabilities that defend forces and U.S. territory from harm. Includes missile defense and infrastructure protection and other capabilities to thwart force application by an adversary.</p>
<p>Focused Logistics</p> <p>LPD -17, C -130, CH -47, H -1 Upgrades, GCSS, T-AKE, T-45 Training System, C-17, C-5 RERP, FMTV, V -22, MH 60</p>	<p>Capabilities to deploy, redeploy, and sustain forces anywhere in or above the world for sustained, in-theater operations. Includes traditional mobility functions of airlift, sealift, and spacelift as well as short-haul (intra-theater and battlefield) transportation. Also includes logistics C2, training, equipping, feeding, supplying, maintaining and medical capabilities.</p>



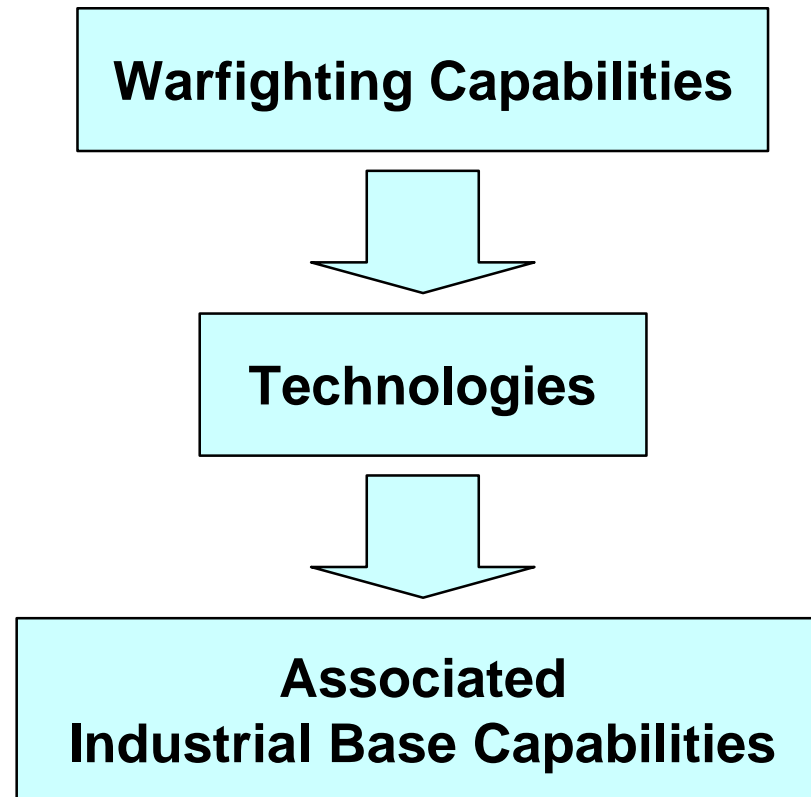
Defense Industrial Base Capability Study Series in Context



Source: ODUSD(IP)



DIBCS Translation Process





DIBCS Report Schedule

DIBCS Report	Publication Date
Battlespace Awareness	January 2004
Command & Control	June 2004
Force Application	October 2004
Protection	December 2004
Focused Logistics	May 2005












Broad Industrial Areas

Battlespace Awareness	<ul style="list-style-type: none">• Acoustic Sensing• Chemical, Biological, Radiological, and Nuclear Event Sensing• Combination Sensing• Environmental Sensing• Electro-Optical Sensing• Hyperspectral Sensing• Information Technology• Infrared Sensing• Laser Sensors	<ul style="list-style-type: none">• Magnetic Sensing• Microwave Sensing• Other Imaging• Radar• Radio Frequency Sensing• Sonar• Tagging• Timing and Geopositioning Devices
Command & Control	<ul style="list-style-type: none">• Collaboration Management• Communication Components• Computers• Data Management• Decision Support• Displays	<ul style="list-style-type: none">• Information Management• Location and Identification• Modeling and Simulation• Power Generation and Storage• Software Encryption and Tasking• Unmanned Vehicle Control



Industrial Base Issues

	Technology	Industrial Base Sufficiency Analysis			Rationale
		Domestic Sources	Foreign Sources		
Battlespace Awareness	Active Hyperspectral Imager	4	3		U.S. capability trails potential adversaries' capabilities due to foreign technology advancements in civil applications.
	Active Electronically Scanned Array (AESA) Radar	2 major	5		Number of major domestic suppliers of AESA radars is probably still sufficient. However, degree of U.S. leadership is threatened by significant overseas competition.
	Maser Clocks	2	3		Maser clocks provide better precision and reliability than cesium atomic clocks and are standard in foreign GPS-like systems. U.S. capability is at best equal, and small market demand limits supplier base.
Command & Control	Helmet Mounted Display	5	4		Traditionally used for pilot applications, use of HMDs is now expanding into land warfare and U.S. leadership may be insufficient given new applications and essentiality to future warfighting concepts.
	Swarming Control Tools	Many ¹	Many ¹		U.S. research efforts are even with foreign institutions, with many foreign developers performing research in this technology area essential for remote vehicle control.
	Optical (Laser) Intersatellite Links	2	3		Competition with European and Japanese developers has been growing. Market is still small and presently two suppliers are adequate.

¹ Swarming Control Tools are still in R&D, not production.



Crafting Defense Business Strategies by Functional Capability

Actor	Objective	Process
Emerging Defense Suppliers Global Defense Suppliers	Better access to U.S. Defense Industrial Base	<ul style="list-style-type: none">• Map technologies by functional capabilities; overlay with U.S. functional capabilities.• Assess which technology is/are gap fillers, innovate, or revolutionize existing capabilities.• Develop business strategy targeting associated senior JCS/Department leadership, program managers, and companies.



Backup



DIBCS Methodology: Battlespace Awareness Example

1

Identify U.S. Leadership
Goals for Capabilities

Capability	Degree of Leadership			
	Neutral	Equal	Be Ahead	Be Way Ahead
Observe & Collect Info World-Wide		Detect airborne EM transmissions	Detect and locate underground, man-made structures	Characterize conventional explosions
Analysis of Intelligence Info	Gather and analyze population trends	Set the boundaries of an adversary's network	Generate combatant position based on sensor data	Integrate various sensor inputs to depict the EM battlespace
Manage Knowledge	Display raw imagery data	Manage operationally significant information	Recover signal from a noise environment	Display analysis based on all source inputs
Model, Simulate & Forecast				Develop a model for predictive battlespace awareness

Decompose
capabilities and
identify functions to
determine enabling
technologies

2

Determine Enabling
Technologies for Be
Ahead/Be Way Ahead
Capabilities

Critical Technology/ Industry List (270)

Long Wave Infrared Imaging
Active Hyperspectral Imager
Laser Interferometry
Active Electronically Scanned Array Radar
Maser Clocks
Ground Penetrating Radar
Lightweight, Broadband, Variable-Depth Sonar
Ultrasonic Imaging
Near Infrared Imaging
Miniature Atomic Clocks
Laser Induced Breakdown Spectroscopy
Polymerase Chain Reaction
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Prioritize technologies
to focus and scope
assessments








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Assess Industrial Base
Capabilities for Each
Critical Technology

Technology Analysis	
Technology Analysis	
Technology Analysis	
Technology Analysis	
Technology Description	Briefly describe technology • Include key component technologies, if known
Relevance to Warfighting	Briefly describe relevance to warfighting capabilities.
Technology Readiness Level	Level 1-9 • Describe technology maturity
Breakthrough or New Way of Doing Business	Breakthrough/New Way of Doing Business/Neither. Justification sentences (include difference between tech that's proven or in development; apply to applications of today)
Industrial Base Assessment	
Domestic Suppliers (3 suppliers—include name, location, paragraph about company and showing relational statement to tech)	Describe type of suppliers (e.g., many small suppliers, few small suppliers, one large supplier) and name important companies in parentheses, comment on future viability where ascertained. • Include both R&D and Production • Assess domestic suppliers (identify up to three)
Foreign Suppliers (3 suppliers—include name, location, paragraph about company and showing relational statement to tech)	Describe type of suppliers (e.g., many small suppliers, few small suppliers, one large supplier) and name important companies and associated countries in parentheses, comment on future viability where ascertained. • Include both R&D and Production, if possible • Assess foreign suppliers (identify key firms)
Market Assessment	Describe future demand and characterize by sector and country/region. • Assess market supply and demand
Technology Leadership Assessment	Significantly Leads/Leads/Even/Trails/Significantly Trails. Indicate according to actual leadership vice desired leadership. • Assess U.S. technology leadership • Show relationship to TRL and Breakthrough/NWDB



Industrial Base Issues

	Technology	Industrial Base Sufficiency Analysis			Rationale	Remedy
		Domestic Sources	Foreign Sources			
Battlespace Awareness	Active Hyperspectral Imager	4	3		U.S. capability trails potential adversaries' capabilities due to foreign technology advancements in civil applications.	More U.S. investment. Department should consider strong program to develop the chemical signature and surveillance capabilities.
	Active Electronically Scanned Array (AESA) Radar	2 major	5		Number of major domestic suppliers of AESA radars is probably still sufficient. However, degree of U.S. leadership is threatened by significant overseas competition.	Continued R&D investment by industry and the Department focused on performance improvements, better manufacturing techniques, and broader applications. Department should carefully manage future competitions and block teaming impediments.
	Maser Clocks	2	3		Maser clocks provide better precision and reliability than cesium atomic clocks and are standard in foreign GPS-like systems. U.S. capability is at best equal, and small market demand limits supplier base.	Department should invest in R&D and structure future systems to allow for competition among innovative timing technologies thus incentivizing industrial investment and attention.
Command & Control	Helmet Mounted Display	5	4		Traditionally used for pilot applications, use of HMDs is now expanding into land warfare and U.S. leadership may be insufficient given new applications and essentially to future warfighting concepts.	Department should fund innovative non-aviation applications and structure acquisition strategies and leverage weapon system designs to promote competition and innovation among suppliers.
	Swarming Control Tools	Many ¹	Many ¹		U.S. research efforts are even with foreign institutions, with many foreign developers performing research in this technology area essential for remote vehicle control.	Department must appropriately control intellectual property rights so that they are available to multiple potential manufacturers and be ready to stage competitions to develop sufficient sources.
	Optical (Laser) Intersatellite Links	2	3		Competition with European and Japanese developers has been growing. Market is still small and presently two suppliers are adequate.	Department should require competition of components during design of optical intersatellite links to encourage multiple satellite communication suppliers and new industry participants.

¹ Swarming Control Tools are still in R&D, not production.



Functional Capabilities Applications in Defense Enterprise Strategies

Corporate Entity	Application	Utility
Government/Industry Program Managers	Decompose programs by functional capabilities/subsystems to assess applications for other platforms/ functions.	Facilitates cross-platform functional applications
Corporate Operating Groups and Military Services	Map operations by functional capabilities to better address customer needs and synergize corporate portfolio.	Provides benefits of functional view at corporate operating level and “common operating picture” across enterprise.
Corporations, the Defense Industrial Base, Defense Establishments, and supranational organizations	Assess business strategies based on consolidated view of existing capabilities relative to required capabilities.	Ensures common language among senior decision makers throughout the defense enterprise, better anticipatory capabilities, and more seamless access to markets/ technology opportunities.